

REMARKS

Applicants' representative appreciate the courtesies extended by Examiner Chawan with respect to the interview conducted on July 21, 2004. During that the interview, the differences between claim 22 and Bridle were highlighted and discussed. Although no agreement was reached because the Examiner indicated that a new search would be conducted, the Examiner encouraged the undersigned to summarize the arguments made during the interview that distinguish the independent claims from Bridle.

Claims stand rejected under 35 U.S.C. §103 as being unpatentable in view of Bridle et al and Nakadai et al. This rejection is respectfully traversed.

Bridle discloses a spectral distance processor for comparing spectra taken from speech in the presence of estimated background noise. As explained on page 2, lines 18-26, both the input spectrum and the template spectrum are masks with an estimate of input noise. Samples of each masked spectrum are marked with a noise mark depending on whether the sample is *estimated* to be speech or noise. Because Bridle's spectral distance processor is intended to be operated with fluctuating and high noise levels, it is quite sophisticated and complex.

Although there may be situations where such complexity and sophistication are appropriate, there are other instances when they are unnecessary. One such instance is when the noise spectrums predominantly come from known noise signals rather than unknown signals that require estimation as in Bridle. An example of a known noise signal is a ring signal generated by a phone. Ring signals have a well-defined, known

frequency spectrum and may be pre-stored in memory. Of course, several known noise spectrums may also be stored in memory. The spectral distance calculator identifies and selects the current noise spectrum to be used in the masking procedures.

The Examiner contends that the claimed first known noise signal reads on background noise referring to page 1, line 7 of Bridle. But this background noise is clearly *unknown*. All the claims explicitly require that the noise signal be "known." On page 1, lines 10-12, Bridle's states:

In a speech recognition system spectra from unknown input words are compared with spectra from known templates or references.

Thus, it is clear that what is known is spectra for a particular speech word, and not spectra from a known background noise. To the contrary, in the next paragraph, page 1, lines 13-20, Bridle explicitly acknowledges that the problem in speech recognition is *unknown* background noise including "intrusive sounds of short duration such as a door slamming." Bridle states that "input and template spectra will be obtained in *different* noise environments to compound the problem of comparison." Even though the Examiner refers to door slamming, it is quite evident that what Bridle is complaining of is that door slamming noise is unknown. Two doors slamming have a different noise profile depending on the type of door, how hard the door is slammed, the material of the door, the sturdiness of the door frame and hinges, whether there are cushioning points placed along the door frame, etc.

Nowhere does the Examiner point out where Bridle discloses "prestorage of one or more spectrums of one or more known noise signals including the first known noise signal." By the Examiner's own analogy, a noise spectrum for a slamming door would need to be prestored in memory in Bridle, which it is not.

To the contrary, Bridle is concerned with calculating noise estimates as described on page 2. The "input spectrum $x(f)$... is masked with an estimate of input noise $m(f)$. Page 2, lines 19-20. It is clear that Bridle is estimating the noise because the noise is not known.

Claims 22 and 36 further recite that the first known noise signal is "used to perform a function unrelated to speech recognition." There is no teaching in Bridle of using the background noise to perform any function—let alone a function unrelated to speech recognition. Where is the sound of a door slamming used by Bridle to perform a function? Non-limiting examples of a first known noise signal used to perform a function unrelated to speech recognition, (which the Examiner agrees are allowable), include "a periodic signal with a repeating pattern used to indicate a message" (claims 31 and 45), "a ring signal used to indicate a message" (claims 32 and 46), "a melody or a buzzer signal used to indicate a message" (claims 33 and 47), "a signal output from a speaker" (claims 34 and 48). Claims 35 and 49 recite, for example, that "the function unrelated to speech recognition is to drive a speaker." Accordingly, Bridle fails to teach that the background noise is "used to a perform a function unrelated to speech recognition."

With respect to claims 23 and 37, the Examiner contends that Bridle teaches zeroing the spectral distance "for each frequency input speech spectra which is due to noise (Page 2, lines 63-64)." However, page 2, lines 63-65, specifically say "instead of a sign a zero value (which denotes a perfect match) to the distant for such a channel, B is giving the *non-zero value* D^* " (emphasis supplied). Thus, Bridle teaches the opposite of what the Examiner contends—that for a noise frequency, the spectral distance is given a non-zero value.

Regarding dependent claims 25 and 39, the Examiner refers to page 3, lines 10-11 which state that "the spectrum distance is just the sum over all the channels of all the values of D from (c)." Where in this text is there a clear teaching of setting A_i "equal to zero if a frequency f_i of the input signal is due to any known noise and A_i is unity if no noise is present at the frequency f_i ?" As pointed out with respect to claims 23 and 27 above, D is given a non-zero value D^* for noise channels.

Nakadai fails to remedy the deficiencies of Bridle pointed out above. There are several other obviousness rejections which combine Bridle and Nakadai with tertiary references. But since the rejections based upon Bridle and Nakadai are improper, all of the rejections are improper and should be withdrawn. The application is now in condition for allowance. An early notice to that effect is earnestly solicited.

FELSTROM et al

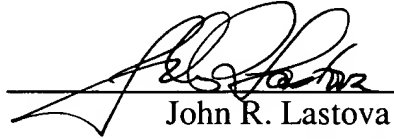
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Respectfully submitted,

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